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Forest Service

Forest Health Strategic Plan for the Northern Region

A Five Year Forest Pest Management Program

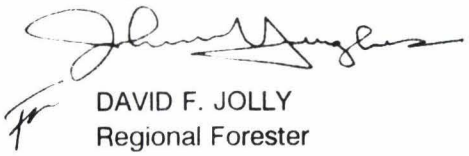
Report 92-3

FOREWORD

Forest health has gained new significance in natural resource management. As forest management changes in response to expanding scientific knowledge and shifting public values, greater emphasis is being placed on the full range of resource values and ecosystem sustainability. An emphasis on forest health is particularly relevant now because the Northern Region has embarked on a major new effort to assess ecosystem integrity and biodiversity. Forest insects and diseases have a major effect on the condition of an ecosystem, and they are a primary indicator of whether that condition is a healthy one. Forest health will be a principal determinant of the effectiveness of management.

The Northern Region has a very successful Forest Pest Management program, responsive to the changing needs of resource managers. Partners on the national forests, in other federal agencies, and in the state forestry agencies are well satisfied with the services provided. Now, the program must progress even more to provide the expertise and leadership necessary to manage ecosystems for optimum health.

This plan sets a course for the Northern Region's Forest Health program for the next 5 years. The action plan was developed with the assistance of the Chief's Office and key resource specialists and cooperators. I would like to see the Forest Service and the Northern Region recognized as leaders in managing healthy forest ecosystems. Implementation of this plan will be an important step toward attaining that goal.



For DAVID F. JOLLY
Regional Forester

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EXPERIMENT STATION

FOREST HEALTH STRATEGIC PLAN
for the
NORTHERN REGION

A FIVE-YEAR FOREST PEST MANAGEMENT PROGRAM

INTRODUCTION

This is a 5-year plan for the Northern Region's Forest Pest Management (FPM) Program. The emphasis is on forest health. Forest health has gained new significance in association with such other concepts as biodiversity, new perspectives and ecosystem management. Forest health may be described in terms of management objectives. It emphasizes the importance of focusing more on long-term forest conditions and relying less on manipulating pest populations. In the pure sense, a healthy forest represents an ecosystem in balance.

This plan is guided by a National Forest Health Strategic Plan which was published by the Chief's Office. It directly addresses those issues in the national plan which are of particular relevance in the Region. It considers the findings of recent national FPM program economic analyses. This plan recognizes expanded forest health protection authorities in the 1990 Farm Bill. It also complements an FPM workload analysis for the Northern Region which was completed in 1989. It will be a strategic guide for developing annual work plans. The Region's silviculturists, planners, and state cooperators provided invaluable assistance in developing the plan.

The plan describes the activities of the FPM staff, seasonals, contractors, and others financed by the annual base FPM program funds. It recognizes the dual role of FPM in providing leadership and service to National Forest managers and others. It also recognizes the key implementation role of resource managers and cooperators who operate from different budget sources.

The Region's FPM program is highly respected for its survey, evaluation, training, technical assistance, and suppression activities. In recent years, the program has progressed to provide increasing emphasis on prevention, integrated pest management, technology development and transfer, and support of forest planning. The program has significant influence on forest management in the Region, and clients are pleased with the service. But this is not enough to meet new challenges. Society is experiencing fundamental changes in values. Forest management is increasingly emphasizing amenities, sustainable productivity, biodiversity, and ecosystem resilience.

Forest insects and diseases influence the condition of ecosystems, and they are prominent indicators of that condition. The FPM program must meet the challenge of shifting values and changing forest management. It must accelerate the transition from a forest pest focus to a forest health emphasis and from service to leadership. To succeed, resource management must have forest health as a principal standard.

This 5-year plan is a key step in advancing this transition in the FPM program. With the help of the Washington Office and some key partners, five emphasis areas were identified as the basis of the future program. Each emphasis area is characterized in terms of a desired condition, an existing condition, and trends. A desired condition is a future state that is realistically attainable. An existing condition describes the current state of the FPM program. Trends describe changes that influence the program. Actions are presented at two levels: base and desired. The base level program can be accomplished with current resources. It reflects changes in the current program in response to trends and changing priorities. The desired level describes additional

activities that would lead to an optimum forest health program, the desired condi[illegible]though it represents a preferred state, it is very likely beyond realistic funding expectations over the [illegible]ing period.

The document contains a budget and personnel section that presents the financial and workforce requirements of the plan. The costs and associated FTEs are defined for the base level and four independent increments above the base.

An appendix presents a summary of estimated costs and FTEs for each emphasis area at the base and desired levels.

The desired conditions for the five emphasis areas are:

Planning - Forest health is integrated into all levels of the planning process.

Forest Management - Forest resource managers understand the significant interactions of insects and diseases within forest ecosystems and implement appropriate management alternatives to meet established objectives.

Forest Health Monitoring - A comprehensive monitoring system contributes to a balanced assessment of the effects of insects, diseases, pollutants, and other factors on forest health.

Public Information and Involvement - Agency personnel and the public understand the role of insects and diseases in healthy forest ecosystems and the influence of various management alternatives on forest health.

Quality of Work Life and Organization - Forest Health is a highly professional, dynamic, and desirable place to work. Policies foster continued development and retention of a skilled and diverse mix of professionals and support staff.

EMPHASIS AREA: PLANNING

The National Forest Health Strategic Plan emphasizes the integration of pest considerations into the resource management planning process. Participation in this process has been a relatively small part of the Northern Region's FPM program. The national emphasis on forest health and a major policy shift toward ecosystem management require a substantial increase in FPM involvement in planning.

Desired Condition: Forest health is integrated into all levels of the planning process.

a. Forest health is adequately considered in all Forest Plans and fully incorporated into integrated resource analysis and project planning.

b. Forest health is clearly defined for all major ecosystems and is a basis for describing desired future conditions.

c. Monitoring information on the health of forest ecosystems is available for forest planning to provide for restoration and maintenance of forest health.

d. Ecosystem response to introduced pests is understood and forest managers act accordingly.

Existing Condition: In the first round of forest planning, Forest Health prepared documents for use in the preparation of each Forest Plan. The information presented was mainly qualitative, and addressed primarily the impacts of major pests on timber values. Existing Forest Plans refer in a general way to forest protection. Standards and guides provide for the use of integrated pest management techniques to protect forests from insect and disease damage. Most Plans state that monitoring will be done through annual insect and disease aerial surveys. Forest pests were addressed directly in a few Plans where major outbreaks were occurring, and pest effects were then considered in yield projections.

At the project level, FPM participates directly on ID teams when invited. This is most likely to occur when forest pests are an overwhelming influence. Otherwise participation is indirect. FPM partners on forests and districts, typically silviculturists, represent insect and disease management interests. A major effort is made to provide pest management training for these partners.

Most decisions regarding Forest Health are deferred to the stand level. Stand prescriptions consider pest effects of different silvicultural treatments. Forest health is generally considered in terms of a stand's ability to meet management objectives.

Trends: National focus on forest health rather than pest control has empowered FPM specialists to move beyond the traditional survey and epidemic suppression approach to one aimed at maintaining forest health within natural bounds. The recent shift toward viewing forests as identifiable ecosystems encourages a holistic view of the roles and functions of forest pathogens and insects.

The new national emphasis on forest health makes it a primary goal of management. In it's broadest sense, forest health implies ecosystem sustainability. In a practical sense, forest health maintains the functions of recycling agents such as decay fungi and bark beetles while considering insects and diseases in the context of historic norms; balancing human objectives with ecosystem realities.

Some natural ecosystems have been drastically altered through the introduc exotic insects and pathogens, creation of air pollution, elimination of fire, and other changes due to s activities. They will undoubtably continue to be altered.

Monitoring and evaluation in the forest planning process have been evolving and can include virtually all forest-related data gathering and analysis. Forest health monitoring will provide essential information for forest planning in the future.

Planning Actions:

Desired Conditions	***Base Level Actions***	***Desired Level Actions***
a. Forest health is adequately considered in all Forest Plans and fully incorporated into integrated resource analysis and project planning.	- Participate on the Regional task force that is developing new planning procedures to manage sustainable ecosystems. - Contact Forests regarding Forest Plan revisions and provide information on insect and disease effects.	- Participate as active member on Forest Plan revision teams. - Expand the capabilities of existing insect and disease stand models and apply them at the project, ecosystem and Forest levels.
b. Forest health is clearly defined for all major ecosystems and is a basis for describing desired future conditions.	- Establish baselines and amplitudes for forest health indicators based on historic insect and disease ranges, stand conditions and fire histories for selected pests in selected ecosystems. - Provide forest health analyses for selected ecosystems to be used in describing desired future conditions and developing management alternatives. - Participate with Forest teams to assess and develop plans to rehabilitate some ecosystems which have diverged from healthy forest conditions.	- Establish baselines and amplitudes for forest health indicators based on historic insect and disease ranges, stand conditions, and fire histories for all significant pests in major ecosystems. - Provide forest health analyses for all major ecosystems to be used in describing desired future conditions and developing management alternatives. - Assess beneficial roles of insects, pathogens, and other organisms. - Update descriptions of forest health as forest health monitoring and analysis produce new information.

		- Participate with Forest teams to assess and develop plans to rehabilitate all major ecosystems which have diverged from healthy forest conditions.
c. Monitoring information on the health of forest ecosystems is available for forest planning to provide for restoration and maintenance of forest health.	- Provide standards and guides for forest insect and disease monitoring for Forest Plans.	- Develop and transfer technology to field units for insect and disease monitoring.
	- Incorporate aerial survey data for selected years and insect pests into a geographic information system format.	- Incorporate aerial survey data for selected pests for all years that maps are available.
	- Monitor and assess forest insect & disease responses to management alternatives through the use of permanent plots and other evaluations.	- Interpret forest health monitoring data to assess its consistency with desired future conditions.
		- Monitor and assess forest insect and disease response to management alternatives on lands managed for both commodity and non-commodity purposes.
d. Ecosystem response to introduced pests is understood and forest managers act accordingly.	- Provide technical assistance to the white pine tree improvement program to assure that adequate progeny screening procedures are available.	- Assess probable effects of abiotic agents and exotic insects and pathogens on forest composition, structure, and function.
	- Monitor gypsy moth so that eradication can be accomplished quickly if needed.	- Develop proactive strategies for new races of white pine blister rust.
		- Evaluate possible impacts of changing environmental conditions on forest health.

- Monitor white pine plantations with known parentage to detect possible new races of white pine blister rust.

- Monitor for introductions of other exotic insects and diseases such as scleroderris canker and European pine shoot moth.

- Evaluat[illegible]ol strategies for exot[illegible]gents emphasizing natural ecosystem components.

EMPHASIS AREA: FOREST MANAGEMENT

The primary focus of the FPM program has been to support field units through training and technical assistance. Resource management remains an emphasis of the National Forest Health Strategic Plan. However, a shift toward managing forest ecosystems requires a re-evaluation of FPM priorities. The new direction emphasizes an understanding of the roles of insects and pathogens in ecosystem processes and the integration of technology to improve forest health into the ecosystem management process.

Desired Condition: Forest resource managers understand the significant interaction of insects and diseases within forest ecosystems and implement appropriate management alternatives.

a. Forest insect and disease effects on all resources are evaluated in support of management activities.

b. Risk-rating procedures and user-friendly, well-validated models are available to project the influences of insects and diseases on forest health and ecosystem integrity.

c. Forest resource managers include forest health and insect and disease considerations in management planning for all resources at all organizational levels.

d. Forest managers have effective, economical, and environmentally safe technology and receive the technical assistance needed to respond to forest health problems.

e. The beneficial roles of insects, pathogens, and other agents in ecosystems are evaluated and considered in management decisions.

Existing Condition: In the past, a relatively small staff of FPM specialists provided pest survey, detection, and evaluation capabilities. When pest populations affected forest management objectives, primarily timber production, pest suppression was attempted.

FPM is progressing from a "detect and suppress" approach to an integrated pest management approach that emphasizes prevention. This shift is reflected in several major areas. Training sessions in insect and disease identification and management provide forest resource managers the skills to recognize the positive and negative effects of management alternatives on insect and disease conditions. Silvicultural manipulations of forest stands are emphasized as a means to ameliorate pest impacts. Models for assessing risk of damage from the major insects and diseases in the Region are being developed to allow better prediction of the effects of management activities on forest health. Semiochemicals (pheromones, etc.) for detecting, monitoring, evaluating, and controlling selected insect pests are being tested and used. Safer and more effective chemical and microbial pesticides are being evaluated and used for pest suppression. Integrated pest management procedures are developed and applied in nurseries, seed orchards, and other tree improvement areas.

Trends: Forest Service management will increasingly emphasize ecosystem sustainability. Insects and diseases play particularly important roles in forests of the northern Rockies. Thus, the need to quantify their influence on ecosystem function and to define the effects of various management activities on insects and diseases will become critical. This information will remain an important component in monitoring, evaluating, implementing, and revising Forest Plans. Likewise, an increased understanding of the relationship of insects and diseases and ecosystem function will help forest managers develop prescriptions at the stand and landscape levels.

Revised management approaches under New Perspectives will require adjustm[illegible] insect and disease considerations and predictive models. New Perspectives may also complicate m[illegible]gement of insects and diseases.

Forest management will shift from stand management practices to a broader landscape management approach. Forest managers will increasingly emphasize prevention or tolerance of insect and disease outbreaks rather than their suppression or control. Genetically improved planting stock that is resistant to, or tolerant of, introduced pests will be judiciously used. Natural genetic resistance to, or tolerance of, pests will be used in ways consistent with sustainable ecosystem processes.

When suppression actions are taken, they will involve new or improved microbial or chemical pesticides, cultural methods, biological controls, and semiochemicals that are both effective and environmentally safe.

The RPA program places greater reliance on state and private ownerships for many of the benefits traditionally provided from National Forest lands. The 1990 Farm Bill expands FPM authorizations and increases federal forestry programs in the state and private sector, resulting in expansion of FPM's cooperative role.

***Forest Management Actions*:**

Desired Conditions	***Base Level Actions***	***Desired Level Actions***
a. Forest insect and disease effects on all resources are evaluated in support of management activities.	- Provide analysis of the effects of mountain pine beetle, western spruce budworm, Douglas-fir tussock moth, dwarf mistletoes, root diseases, and white pine blister rust on stand development and growth under varying treatments, including no action. - Identify fungi that cause root diseases and implications of less known root pathogens. - Provide biological evaluations to support site-specific pest management decisions.	- Expand effects analyses of the major insects and diseases to the ecosystem level; include additional insects and diseases. - Analyze the beneficial effects of forest insects, pathogens, and other agents, and the effects of management activities on them.

b. Risk rating procedures and user-friendly, well-validated models are available to project the influences of insects and diseases on forest health and ecosystem integrity.	- Test, validate, and transfer stand projection models and risk rating procedures for mountain pine beetle, western spruce budworm, root diseases, dwarf mistletoes, and white pine blister rust.	- Test, validate, and transfer stand projection models for interactions among insect and disease complexes. - Test, validate, and transfer stand projection models and risk rating procedures for "lesser" insects and diseases
c. Forest resource managers include forest health and insect and disease considerations in management planning for all resources at all organizational levels.	- Conduct annually three to five formal insect and disease recognition and management training sessions that cover effects on all forest resources. Assist Forests with informal training. - Present annually an advanced "refresher" training session targeted at keeping foresters and silviculturists current with new developments and technologies. - Provide responsive technical assistance to the field through efficient use of on-site visits, DG, phones, and technical materials. - Transfer new technical information on forest health to partners and clients in the form of reports and evaluations. - Maintain existing demonstration areas as a means of technology transfer.	- Develop video programs that can be used in support of basic recognition training, and that cover management alternatives and considerations for the major insects and diseases. - Develop and implement expert systems for management of selected insects and diseases. - Produce an average of one technical publication per professional per year. - Establish demonstration areas for management of all major insects and diseases. - Participate on all ID teams where insects or diseases are significant concerns.

	- Participate as core members or ad hoc members of ID teams consistent with relative signifiance of forest health issues. - Participate on integrated management reviews of Forests & Districts.	
d. Forest managers have effective, economical and environmentally safe technology and receive the technical assistance needed to respond to forest health problems.	- Lead in the development of: integrated pest management technology on nursery, seed orchard and regeneration pests silvicultural management of insects and diseases; and survey and control of insects with pheromones. Assist research with other technology development. - Conduct training and certification sessions for field personnel on safe and effective use of pesticides. - Provide analyses for NEPA documentation of the human health and environmental risk of various pest control technologies. - Assist State agencies and other cooperators in pesticide training sessions. - Assess effects of timber harvesting systems on predatory and communities. - Develop and test biological controls of nursery root pathogens.	- Develop impact estimates and management techniques for significant regeneration pests. - Evaluate prescribed burning & other non-traditional techniques for forest health enhancement. - Evaluate biological control technologies and develop guidelines for use, for example, enhancing competing fungi for root disease control. - Develop and test methods for manipulating insect predators and parasites for controlling controlling forest pests/

e. The beneficial roles of insects, pathogens, and other agents in ecosystems are evaluated and considered in management decisions.	- Assess beneficial roles of root pathogens and insects in ecosystem processes such as nutrient recycling.	- Develop and test ways to enhance habitat for cavity-nesting birds using heart rot fungi. - Assess and enhance beneficial roles of insects, pathogens, and other organisms in ecosystem processes such as nutrient recycling.

EMPHASIS AREA: FOREST HEALTH MONITORING

Forest Health Monitoring is a major national FPM initiative. In the past, FPM has collected insect and disease information to support stand management decisions. In the future, forest health monitoring will also provide the information needed for evaluation of ecosystem management methods.

Desired Condition. A comprehensive monitoring system contributes to a balanced assessment of the effects of insects, diseases, pollutants and other factors on forest health.

a. The deviations of key forest health indicators from established baselines are detected and reported.

b. The causes of forest health changes and the effects of forest management on forest health are evaluated and reported.

Existing Condition: FPM tracks the progress of major insect epidemics through annual aerial surveys. Follow-up evaluations are made as warranted, depending on the potential effects of the outbreaks. Many insects and diseases are not readily visible from the air, and are not tracked through aerial surveys. Ground surveys, permanent plots, and biological evaluations are initiated when special needs arise.

Survey and evaluation results are reported annually. These results are used for national reporting, forest plan monitoring, model validation, timber sale planning, public involvement, and other activities.

Trends: The health of the nation's forests has become a major concern. Many forest ecosystems throughout the Region are experiencing widespread insect and disease outbreaks. These outbreaks often reflect ecosystem imbalance. The exclusion of fire for most of this century, invasions of exotic insects and pathogens, and some management practices are important causes of these conditions.

The Forest Service is becoming more responsive to forest health issues. Increased awareness of ecosystem imbalance and the role of insects and diseases in this imbalance is causing a critical need for additional information. These information needs include: the extent, severity, and population trends of all significant insects and diseases; the effects of management activities on insects and diseases; and the relationship of insect and disease outbreaks to forest health.

The Forest Service, Environmental Protection Agency and the States have responded to information needs by initiating a National Forest Health Monitoring (NFHM) program designed to detect and evaluate regional and national changes in forest health. Region 1 is scheduled to implement the NFHM program in 1994. In preparation for this involvement, FPM staff and State Forest Health specialists are participating at the national level in planning meetings and on technical committees including design and analysis and reporting.

Forest Health Monitoring Actions:

Desired Conditions	*Base Level Actions*	*Desired Level Actions*
a. The deviations of key forest health indicators from established baselines are detected and reported.	- Detect annually and map major insect outbreaks using aerial surveys. - Report survey results in annual Forest Insect and Disease Conditions Reports. - Test the use of aerial video technology for detecting and evaluating insect and disease effects.	- Detect annually and quantify all aerially visible insect and disease outbreaks using developing technology. - Implement supplemental detection surveys to quantify annual tree mortality, determine cause, and detect other causes of unhealthy forest conditions.
	- Develop GIS technology for storing, mapping, and disseminating insect and disease data.	- Assist Forest Inventory and Analysis in the establishment of permanent detection monitoring plots by training field crews to collect insect and disease data.
	- Track progress and contribute to the development of sampling, analysis and reporting technology used in other parts of the nation.	- Report annually on the status and trends of all significant forest insects, diseases and other health indicators.
b. The causes of forest health changes and the effects of forest management on forest health are evaluated and reported.		- Initiate forest health evaluation monitoring projects to determine the causes of conditions identified through detection monitoring. - Report the causes of forest health changes based on detection and evaluation monitoring data.

EMPHASIS AREA: PUBLIC INFORMATION AND INVOLVEMENT

The management of forest resources has gained great public interest and social importance. FPM must be aware of and sensitive to public values and concerns. FPM has involved the public in the past, but the need for a much greater involvement is recognized nationally and regionally.

Desired Condition: Agency personnel and the public understand the role of insects and diseases in healthy forest ecosystems and the influence of various management alternatives on forest health.

a. The public has sufficient understanding of forest health issues to participate knowledgeably in forest resource decisions.

b. FPM is recognized as a source of expertise and leadership on the issue of forest health and is a full partner in the Forest Service effort to promote biodiversity and ecosystem sustainability.

Existing Condition: For many years FPM has trained agency and non-agency foresters, silviculturists, and forestry technicians to diagnose and manage insect and disease problems. FPM training sessions are well attended and highly regarded. For many people with natural resource backgrounds, these sessions provide a first intensive, organized look at insect and disease problems.

FPM specialists have had a more limited communication on forest health issues with other resource specialists, staff and line officers, and the public. This communication has been in the form of information materials, including pictorial displays, videotapes, pamphlets, and news releases on forest insect and disease concerns.

Trends: The public's influence on the management of our nation's forests will increase. The management of forest resources has become as much a social effort as a technical one. More attempts will be made to legislate forest management practices, such as the type and extent of certain timber harvesting methods. Thus the public and its designated decisionmakers must understand the potential ecosystem consequences of these actions. Conversely, public values and opinions must be considered by the agencies.

In the northern Rocky Mountain forests, insects and diseases rank with fire as major determinants of forest conditions. It is increasingly recognized that many of our past management activities, including fire suppression and some cutting practices, have affected the incidence of insects and disease. However, our understanding of these phenomena can no longer remain a subject for technical specialists alone.

The Forest Service has recently begun to shift emphasis from the concept of managing forests to provide a variety of outputs to the concept of sustaining ecosystems that will thereby meet the reasonable demands placed on them. A number of related ideas are converging to form this ecosystem concept. These ideas are encompassed by initiatives such as New Perspectives and the increased emphasis in the agency on biodiversity, ecosystem sustainability, and forest health. The implications and the effects of this change in emphasis will challenge forest managers for the foreseeable future. As the Forest Service implements these changes, it is very important that FPM conveys the critical role of insects and diseases in properly functioning ecosystems and the potential pest-related consequences of available management alternatives.

***Public Information and Involvement Actions*:**

Desired Conditions	***Base Level Actions***	***Desired Level Actions***
a. The public has sufficient understanding of forest health issues to participate knowledgeably in forest resource decisions.	- Assist field personnel in public meetings related to management activities that involve forest health issues.	- Encourage each FPM professional to make at least one presentation per year on forest health issues before a community group or special interest organization.
	- Communicate forest health concepts and issues to other forest resource professionals by participating in functions conducted by universities, professional societies, and other organizations.	
	- Prepare educational materials with silviculturists and ecologists that communicate forest health and ecological issues.	- Prepare a videotape on forest health issues in the northern Rockies for general public use in visitor centers, public presentations, etc.
	- Inform the public of significant forest health issues and pest outbreaks through newsletters, reports, press releases and other information outlets.	- Intensify all public involvement activities.
	- Participate in conservation and environmental education programs to increase forest health awareness.	
b. FPM is recognized as a source of expertise and leadership on the issue of forest health and is a full partner in the Forest Service effort to promote biodiversity and ecosystem sustainability.	- Participate in Forest Service and other agency meetings and workshops to provide forest health perspectives as the agencies develop new analyses, direction and policy on forest management.	

- Change the unit name and develop a logo to reflect the changing emphasis in managing forest health.

- Accomplish action items identified in this 5-year plan.

EMPHASIS AREA: QUALITY OF WORK LIFE AND ORGANIZATION

Organizational productivity depends upon employee initiative, motivation and creativity. Private and public sectors are increasingly emphasizing quality of work life. Our ability to attract and retain top professionals will require that we keep pace with this national trend.

Desired Condition: Forest Health is a highly professional, dynamic, and desirable place to work. Policies foster continued development and retention of a skilled and diverse mix of professionals and support staff.

a. In association with Forest Insect and Disease Research (FIDR), career opportunities are available that offer advancement in both management and technical fields.

b. Priority-setting, innovation, and partnerships promote the best use of a relatively small FPM work force.

c. Progressive policies accommodate employees' personal and professional needs, improve morale, and encourage employee retention while accomplishing program goals.

d. Forest Health is organized for optimum efficiency.

Existing Condition: Forest Health has been able to hire many of the best qualified entomology and pathology graduates due to relatively strong budgets and a scarcity of jobs elsewhere. Significant progress has been made in diversifying the workforce.

The variety, scope, and complexity of FPM work can provide satisfying challenges throughout a career. Most FPM specialists remain in technical positions. As they publish in scientific journals, participate in task forces, consult on forest management problems, and otherwise increase their knowledge and contributions, they become experts in their fields. However, promotion potential in technical fields has not kept pace with these increasing skills. Many pathologists and entomologists have improved their skills significantly while remaining at the same grade for 10 years or more. FIDR provides a career ladder for scientists and managers. FPM has limited advancement opportunities for those desiring an alternative to a technical career.

The great demand for forest insect and disease management services is placing increasing pressure on the work force. It is not possible to meet all the requests for service. At the same time, a changing emphasis in forest management requires new information and techniques for managing insect and diseases. The need to set priorities is apparent. So is the need to work through partners at the Forests and Districts who have forest management responsibilities at the field level.

The Forest Service and the Region have liberalized many work policies, but improvement is needed to retain a motivated and diverse workforce. Policies to accommodate personal and family needs have lagged behind initiatives in the corporate world. New and innovative approaches to office childcare, job sharing, and working at home, have been adopted at some Forest Service units but have not become general practice. Some consider overnight travel excessive. Employees often work extra hours in evenings and weekends.

Several organizational changes have also affected FPM. Organizational changes in the past three years include the incorporation of FPM into the Timber Management staff unit and the establishment of a field office in Coeur d'Alene.

Trends: The forest health emphasis will increase the need for FPM service and technology. FPM must redirect its priorities to provide the tools, information, and other capabilities needed at the field level to manage forests for health. FPM participation in insect and disease technology development will intensify.

Highly skilled employees are necessary as work becomes more specialized. The ployees will become more valuable as universities graduate fewer entomologists and pathologists. At the same time social trends are affecting the workforce. Families increasingly include single parents or two working parents. Workforce diversity will continue to be a high national priority, and FPM policies must reflect this emphasis. These changes will challenge the creativity and accommodation of managers, who must retain and assist the development of highly skilled workers. Changes within the agency will also challenge the flexibility and commitment of technical specialists, who must address the new demands of forest management.

***Quality of Work Life and Organization Actions*:**

Desired Conditions	***Base Level Actions***	***Desired Level Actions***
a. In association with FIDR, career opportunities are available that offer advancement in both management and technical fields.	- Pursue and initiate shared FIDR/FPM positions to improve technology development and to provide expanded career potential. - Intensify cooperative work, details and personnel transfer opportunities with FIDR that make best use of talents and skills throughout the organization.	
b. Priority-setting, innovation, and partnerships promote the best use of a relatively small FPM work force.	- Cultivate an atmosphere that recognizes the importance of office time as well as field time. - Recognize capability of existing workforce in annual work planning and in adjusting to additional work; prioritize to ensure realistic work load. - Recognize employee innovation to increase efficiency.	

c. Progressive policies accommodate employees' personal and professionalneeds, improve morale, and encourage employee retention while accomplishing program goals.

- Maintain and enhance employees' technical expertise to improve skills on the job. Include training in forest health, communications, and conflict resolution; details; and ID team participation.

- Seek out training, continuing education, and detail opportunities to expand qualifications and competiveness of FPM personnel for positions outside FPM.

- Strive to accommodate individual needs and promote acceptance of flexible work schedules, part-time work and job sharing, working at home, and office childcare.

- Assure mutual agreement on spouse placement between employee and management before hiring or transfer; then pursue vigorously as agreed.

- Assure that employees and management fully understand the options and agree to the most mutually satisfactory arrangements for maternity/paternity leave and using personal sick leave for child, elder or spouse sickness.

	- Clarify policy on use of Forest Service vehicles, including to drive to restaurants and allow for travel with family members and companion pets.	
	- Assure specialists the opportunity to attend at least one professional meeting per year.	
d. Forest Pest Management is organized for optimum efficiency.	- Increase secretarial and technician services at the Coeur d'Alene field office. Increase data management and analysis capabilities in the RO.	
	- Decide the most efficient organizational structure in terms of field offices.	- Implement field office organizational structure as determined to be most efficient.

BUDGET AND PERSONNEL

This section addresses the budget and personnel implications of the plan. It describes base level costs and FTE requirements and presents increments above the base level. The budget information is in FY 1991 dollars.

All planned costs are from the Survey and Technical Assistance expanded budget line item. These are the funds used for the continuing standard FPM program. Any funds from the Special Project and Suppression expanded budget line items will be in addition to those shown in the plan. The latter are requested on an annual basis for specific projects so are not included in this basic program plan.

Total costs are separated into three categories: support assessments, permanent staff, and seasonals/ contracts:

- Support assessments are indirect costs calculated by the budget office. They include such items as space rent, FTS, telephones, fleet overhead, Data General (DG), and support of other units.

- Permanent staff costs are those incurred within the home unit for the direct expenses of permanent employees (professional specialists, technicians, and administrative and clerical personnel). In addition to salaries and travel, these costs include such items as supplies, equipment, tuition, and aircraft and vehicle rentals.

- Seasonals/contracts costs involve those sources of assistance, other than the permanent staff, for accomplishing the continuing program. These can include summer employees, contracts with external sources of expertise, and cooperation with research or NFS units.

Permanent FTEs are those contributing directly to the program (professional specialists, technicians, administrative, and clerical).

The base level program involves the same total of funds and permanent FTEs as the actual FY 1991 program. Increases above the base are presented as increments. Each increment would accomplish some portion of the desired level. The increments are presented in general order of current priority, but not a fixed order. The priorities could change over time with changes in national or regional direction and associated management decisions.

BASE LEVEL

Although the base level can be accomplished with FY 1991 funding and personnel, it represents a significantly different program from the actual 1991 program. The action items reflect current trends, national direction, and changing priorities.

The total costs of $1,495,000 include the Chief's final 1991 financial advice ($1,345,000) plus $150,000 to cover major increases in support assessments (see Increment A).

In addition to the costs shown here from Survey and Technical Assistance funds, Special Project and Suppression funds are likely to be utilized also for technology development projects. Seasonals/contracts would increase with the use of these project funds.

Support Assessments	$ 316,000
Permanent Staff	1,149,000
Seasonals/Contracts	30,000
Total Costs	$1,495,000
Permanent FTEs	20.5

INCREMENT A

SUPPORT ASSESSMENTS

Support assessments for the FPM program increased by 155 percent from FY 1990 to FY 1991. Most of this increase was for DG and resulted from the Regional Forester's decision to pay these costs from line item assessments rather than from General Administration (GA). This major increase will be a continuing annual assessment, not just a one-time assessment for 1991. Other support assessments such as for space rent and FTS are increasing at extraordinary rates, well beyond normal inflation.

These support assessments are personnel intensive; most are directly related to number of employees in the functional unit. The assessments are decided by the Regional Forester, so are largely beyond control of the staff unit. The current level program and staff cannot be maintained without this increment.

Support Assessments	$150,000
Permanent Staff	--
Seasonals/Contracts	--
Total Costs	$150,000
Permanent FTEs	--

INCREMENT B

NATIONAL PROGRAM EMPHASIS: FOREST HEALTH MONITORING

This increment will provide for full participation of the Region in the national forest health monitoring effort. It contributes additional staff plus equipment and software for aerial video, GIS, remote sensing, and data management and analysis.

The state forestry agencies will participate in this monitoring program with additional federal funds. The costs shown do not include these Cooperative Forest Health Program funds, however.

Support Assessments	$ 75,000
Permanent Staff	200,000
Seasonals/Contracts	25,000
Total Costs	$300,000
Permanent FTEs	3

INCREMENT C

NATIONAL PROGRAM EMPHASIS: PLANNING AND PUBLIC INVOLVEMENT

Substantial opportunity exists above the base level to develop information and technologies that will facilitate forest health considerations in planning and management. Increment C would enhance FPM's contribution to planning and public involvement that is increasingly focused on ecosystem function. This increment would increase activities in several emphasis areas that include:

active participation on Forest Plan revision teams,

- expansion of insect and disease stand models to function at project, ecosystem, and forest levels
- establishment of historic baselines and amplitudes for forest health indicators, and
- interpretation of monitoring data on forest health conditions relative to the desired future condition.

In addition, Increment C would increase FPM interaction with the public on forest health issues through preparation of videotapes, publications, and public presentations.

Support Assessments	$ 50,000
Permanent Staff	140,000
Seasonals/Contracts	10,000
Total Costs	$200,000
Permanent FTEs	2

INCREMENT D

NATIONAL PROGRAM EMPHASIS: PLANNING, PUBLIC INVOLVEMENT, AND FOREST MANAGEMENT

Increment D includes all activites under Increment C with some additions. This increment would expand FPM's efforts to develop management strategies for exotic species. The benefical roles and ecosystem functions of selected insects and diseases would be more completely investigated and incorporated into developing management strategies. Ecosystem analyses and modeling efforts would be expanded to include additional insects and diseases and the interactions between insects and diseases. Increment D would also facilitate FPM's development of alternative management options for a variety of insects and diseases such as Annosus root disease and mountain pine beetle.

Although this increment would not fund the desired level entirely, it represents a logical increase that approaches an optimum FPM program and desired condition.

Support Assessments	$125,000
Permanent Staff	350,000
Seasonals/Contracts	25,000
Total Costs	$500,000
Permanent FTEs	5

APPENDIX

Estimated Costs ($000) and FTEs for Emphasis Areas

Emphasis Area/Desired Condition	*Base Level* Cost	FTE	*Desired Level** Cost	FTE
PLANNING				
a. Forest health is adequately considered in all Forest Plans and fully incorporated into integrated resource analysis and project planning.	58	0.8	109	1.5
b. Forest health is clearly defined for all major ecosystems and is a basis for describing desired future conditions.	95	1.3	175	2.4
c. Monitoring information on the health of forest ecosystems is available for forest planning to provide for restoration and maintenance of forest health.	66	.9	255	3.5
d. Ecosystem response to introduced pests is understood and forest managers act accordingly.	58	.8	182	2.5
Total: Planning	277	3.8	721	9.9
FOREST MANAGEMENT				
a. Forest insect and disease effects on all resources are evaluated in support of management activities.	263	3.6	146	2.0
b. Risk-rating procedures and user-friendly well-validated models are available to project the influences of insects and diseases on forest health and ecosystem integrity.	88	1.2	146	2.0
c. Forest resource managers include forest health and insect and disease considerations in management planning for all resources at all organizational levels.	336	46	184	2.4

d. Forest managers have effective, economical, and environmentally safe technology and receive the technical assistance needed to respond to forest health problems.	167	2.3	254	3.5
e. The beneficial roles of insects, pathogens, and other agents in ecosystems are evaluated and considered in management decisions.	8	.1	88	1.2
Total: Forest Management	862	11.8	818	11.1
FOREST HEALTH MONITORING				
a. The deviations of key forest health indicators from established baselines are detected and reported.	139	1.9	285	2.8
b. The causes of forest health changes and the effects of forest management on forest health are evaluated and reported.	--	--	15	.2
Total: Forest Health Monitoring	139	1.9	300	3.0
PUBLIC INFORMATION AND INVOLVEMENT				
a. The public has sufficient understanding of forest health issues to participate knowledgeably in forest resource decisions.	88	1.2	94	1.2
b. FPM is recognized as a source of expertise and leadership on the issue of forest health and is a full partner in the Forest Service effort to promote biodiversity and ecosystem sustainability.	22	.3	--	--
Total: Public Information and Involvement	110	1.5	94	1.2

QUALITY OF WORKLIFE AND ORGANIZATION				
a. In association with Forest Insect and Disease Research (FIDR), career opportunities are available that offer advancement in both management and technical fields.	29	.4	--	--
b. Priority-setting, innovation, and partnerships promote the best use of a relatively small FPM work force.	14	.2	--	--
c. Progressive policies accommodate employees' personal and professional needs, improve morale, and encourage employee retention while accomplishing program goals.	43	.6	--	--
d. Forest Health is organized for optimum efficiency.	21	.3	250	.2
Total: Quality of Worklife and Organization	10	1.5	250	.2
TOTAL: ALL EMPHASIS AREAS	1,495	20.5	2,183	25.4

*Desired level figures are in addition to, not inclusive of, base level figures.